

Serial No. 09/960,276
Amendment dated November 22, 2004
Reply to Official Action of July 21, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1. (currently amended) A steel processing material for addition into a heat of steel in a steel making furnace comprising:

(a) a dried post combustion material (PCM) recycled from the exhaust of the steel making furnace; and

(b) a slag foaming material;

wherein the dried post combustion material is sorted prior to being added to the steel making furnace.

Claim 2. (original) The steel processing material of claim 1 wherein the slag foaming material comprises about 90% coal and about 10% dolomitic stone.

Claim 3. (original) The steel processing material of claim 1 comprising about 5% to about 30% of the dried PCM.

Claim 4. (original) The steel processing material of claim 1 wherein the dried PCM comprises less than about 2% water.

Claim 5. (original) The steel processing material of claim 1 wherein the dried PCM is of an injectable particle size, has an average particle size sufficiently small to allow injection of the PCM into the heat of steel.

Claim 6. (original) The steel processing material of claim 1 wherein the dried PCM has maximum particle not greater than about 5/16 of an inch.

Claim 7. (original) The steel processing material of claim 1 wherein the dried PCM

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comprises about 30% to about 55% Fe.

Claim 8. (withdrawn) A method of recycling exhaust waste material form an electric arc furnace comprising:

- (a) recovering the exhaust waste material form an electric arc furnace;
- (b) drying the exhaust waste material;
- (c) adding scrappy steel to the electric arc furnace; and
- (d) adding the exhaust waste material to the electric arc furnace wherein

iron from the exhaust waste material is recycled.

Claim 9. (withdrawn) The method of recycling the exhaust waste material of claim 8 wherein drying is conducted in a screw auger dryer.

Claim 10. (withdrawn) The method of recycling the exhaust waste material of claim 9 wherein the screw auger dryer comprises an induction heater.

Claim 11. (withdrawn) The method of recycling the exhaust waste material of claim 9 further comprising sorting the PCM to obtain a fraction having an average particle size processable by the screw auger prior to drying.

Claim 12. (withdrawn) The method of recycling the exhaust waste material of claim 11 wherein exhaust waste material is sorted to obtain a fraction having a particle size of about 3/4 of an inch.

Claim 13. (withdrawn) The method of recycling the exhaust waste material of claim 8 wherein the drying is conducted in a rotary dryer.

Claim 14. (withdrawn) The method of recycling the exhaust waste material of claim 8 wherein drying the exhaust waste material comprises drying the exhaust waste material to not

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greater than about 2% water content.

Claim 15. (withdrawn) The method of recycling the exhaust waste material of claim 8 wherein drying the exhaust waste material comprises air drying the exhaust waste material to about 6% to about 8% water content.

Claim 16. (withdrawn) The method of recycling the exhaust waste material of claim 8 further comprising sorting the exhaust waste material to obtain a fraction having an average particle size processable by an injection gun.

Claim 17. (withdrawn) The method of recycling the exhaust waste material of claim 16 wherein the exhaust waste material is sorted to obtain a fraction having a maximum particle size of about 5/16 of an inch.

Claim 18. (withdrawn) The method of recycling the exhaust waste material of claim 8 further comprising conveying the dried exhaust waste material to a first container.

Claim 19. (withdrawn) The method of recycling the exhaust waste material of claim 8 further comprising mixing the dried exhaust waste material with a slag foaming material.

Claim 20. (withdrawn) The method of recycling the exhaust waste material of claim 19 wherein mixing is conducted by adding the dried exhaust waste material and concurrently adding slag foaming material into a container.

Claim 21. (canceled)

Claim 22. (withdrawn) A method of manufacturing steel in an electric arc furnace comprising:

(a) melting in the electric arc furnace a first heat of steel comprising a liquid steel portion and a foamy slag portion;

- (b) evacuating the emissions from the first heat wherein solid waste material is exhausted from the heat;
- (c) mixing the solid waste material with a slag foaming material to form a steel processing material; and
- (d) adding the steel processing material into a second heat of steel.

Claim 23. (withdrawn) The method of manufacturing steel of claim 22 wherein the solid waste material is recovered from the first heat.

Claim 24. (withdrawn) The method of manufacturing steel of claim 22 further comprising drying the solid waste material before mixing the solid waste material with a slag foaming material.

Claim 25. (withdrawn) The method of manufacturing steel of claim 22 wherein the adding of the steel processing material into a second heat of steel comprises injecting the steel processing material with an injection gun.

Claim 26. (currently amended) A steel processing material, at least partially recycled from an electric arc furnace, comprising:

- (a) an iron-bearing material having less than 2% moisture by weight and recycled from the arc furnace; and
- (b) a slag foaming material,

wherein the steel processing material contributes to the foaming of slag when added to a heat of steel in the arc furnace and reacts with the heat to recover iron from the iron-bearing material to the heat, further wherein less than about 1% by weight of the total iron in the heat being recovered is iron.

Claim 27. (previously presented) The steel processing material of claim 26 wherein the iron-bearing material is post combustion material, bag house dust, scale, or iron fines.

Claim 28. (canceled)

Claim 29. (canceled)

Claim 30. (currently amended) A steel processing material for addition into a heat of steel in an electric arc furnace comprising:

(a) a dried post combustion material (PCM) recycled from the exhaust of an electric arc furnace, and

(b) a slag forming material;

wherein the dried post combustion material is sorted prior to being added to the electric arc furnace and, wherein the recovery of iron from the steel processing material is only a portion of the iron in the heat.

Claim 31. (withdrawn) The method of manufacturing steel of claim 22 wherein the steps are repeated until the concentration of heavy metals in the solid waste material reaches a set point.

Claim 32. (withdrawn) The method of manufacturing steel of claim 31 further comprising sending the PCM to a reclamation process once the concentration of heavy metals in the PCM reaches the set point.